

Serial No. : 10/586,002
Filed : July 12, 2006

IN THE CLAIMS:

Please amend claims as follows:

1. (previously canceled)
2. (previously canceled)
3. (currently amended) A ball endmill comprising ~~(a)~~:
a cylindrical tool body which is to be rotated about an axis thereof, and ~~(b)~~:

ball-nosed end cutting edges which are located in an axially distal end portion of said tool body and which describe a semi-spherical-shaped locus during rotation of said tool body,

wherein each of said ball-nosed end cutting edges includes ~~(b-1)~~ a first portion extending from said axis and provided by a radially inner portion of each of said ball-nosed end cutting edges, and ~~(b-2)~~ a second portion contiguous to said first portion and provided by a radially outer portion of each of said ball-nosed end cutting edges, both the first portion and the second portion being located at a radially inner portion of the ball-nosed end cutting edge as seen in a distal end view,

wherein said first portion is defined by a circular arc which is convex in a direction of the rotation of said tool body and which has a first radius of curvature ~~as seen in a~~ in the distal end view, a ratio of said first radius of curvature

Serial No. : 10/586,002
Filed : July 12, 2006

to an outside diameter of said cylindrical body is in a range between 0.025 and 0.10,

and wherein said second portion is defined by a circular arc which is convex in said direction of the rotation of said tool body and which has a second radius of curvature ~~as-seen~~ in the distal end view, said second radius of curvature is larger than said first radius of curvature.

4. (previously amended) The ball endmill according to claim 3, wherein said circular arc defining said first portion of each of said ball-nosed end cutting edges has a central angle that is not smaller than 60° and is not larger than 120° as measured in said distal end view, where the central angle is an angle between a first line connecting a center of the first radius and the axis and a second line connecting the center of the first radius and a connection point of said first portion and said second portion.

5. (previously introduced) The ball endmill according to claim 3,

wherein said first and second portions of each of said ball-nosed end cutting edges are connected to each other at a connection point,

and wherein a first circle that is partially constituted by said circular arc defining said first portion is inscribed at said connection point to a second circle that is partially constituted by said circular arc defining said second portion.

Serial No. : 10/586,002
Filed : July 12, 2006

6. (currently amended) The ball endmill according to claim 3, further comprising ~~(e)~~ peripheral cutting edges each of which is contiguous to said second portion of a corresponding one of said ball-nosed end cutting edges and extends away from said axially distal end portion toward a shank portion of said tool body.

7. (previously amended) The ball endmill according to claim 3, wherein a ratio of said second radius of curvature to said outside diameter of said cylindrical body is in a range between 0.55 and 0.65.

8. (previously introduced) The ball endmill according to claim 3, wherein said ball-nosed end cutting edges consist of at least three ball-nosed end cutting edges.

9. (currently amended) A ball endmill comprising ~~(a)~~:
a cylindrical tool body which is to be rotated about an axis thereof, and ~~(b)~~

ball-nosed end cutting edges which are located in an axially distal end portion of said tool body and which describe a semi-spherical-shaped locus during rotation of said tool body,

wherein each of said ball-nosed end cutting edges includes ~~(b-1)~~ a first portion extending from said axis and provided by a radially inner portion of each of said ball-nosed end cutting edges, and ~~(b-2)~~ a second portion contiguous to said first portion and provided by a radially outer portion of each of said ball-nosed end cutting edges, both the first

Serial No. : 10/586,002
Filed : July 12, 2006

portion and the second portion being located at a radially inner portion of the ball-nosed end cutting edge as seen in a distal end view,

wherein said first portion is defined by a circular arc which is convex in a direction of the rotation of said tool body and which has a first radius of curvature ~~as seen in a~~ in the distal end view,

and wherein said second portion is defined by a circular arc which is convex in said direction of the rotation of said tool body and which has a second radius of curvature ~~as seen~~ in the distal end view, said second radius of curvature is different from said first radius of curvature.

10. (previously introduced) The ball endmill according to claim 9, wherein said second radius of curvature is larger than said first radius of curvature.